Create Ansible roles using the Ansible Galaxy command and use those roles in the playbook.

List of roles:

1. **Install Zip, Unzip, Wget**
2. **Install Tomcat (Download the war file and install as a Service)**
3. **Install Nginx (Download the war file and install as a Service)**

I had created a whole project in like the aws itself.

First make the connection between the three EC2 instances with the help of ssh key generation and exchange of keys

One will be a master and the other will be an agent.

Now we make a role inside master instance

Name it as install-zip-unzip-wget(as we had written all the roles inside a same file)

```
        state: present
[root@ip-172-31-11-58 ec2-user]# cat install-zip-unzip-wget/tasks/main.yml
- name: Install Zip
  yum:
    name: zip
    state: present
- name: Install unzip
  yum:
    name: unzip
    state: present
- name: Install wget
  yum:
    name: wget
    state: present
```

And the playbook is written as

```
[root@ip-172-31-11-58 ec2-user]# cat playbook.yml
---
- name: Playbook Name
  hosts: web
  become: yes

  roles:
    - install-zip-unzip-wget
```

And when we apply these playbook we get.(ansible-playbook playbook.yml)

```
[root@ip-172-31-11-58 ec2-user]# ansible-playbook playbook.yml

PLAY [Playbook Name] ***********************************************************************************************************************************************************

TASK [Gathering Facts] *********************************************************************************************************************************************************
[WARNING]: Platform linux on host 172.31.2.169 is using the discovered Python interpreter at /usr/bin/python, but future installation of another Python interpreter could
change this. See https://docs.ansible.com/ansible/2.9/reference_appendices/interpreter_discovery.html for more information.
ok: [172.31.2.169]
[WARNING]: Platform linux on host 172.31.6.71 is using the discovered Python interpreter at /usr/bin/python, but future installation of another Python interpreter could
change this. See https://docs.ansible.com/ansible/2.9/reference_appendices/interpreter_discovery.html for more information.
ok: [172.31.6.71]

TASK [install-zip-unzip-wget : Install Zip] ************************************************************************************************************************************
ok: [172.31.6.71]
ok: [172.31.2.169]

TASK [install-zip-unzip-wget : Install unzip] **********************************************************************************************************************************
ok: [172.31.2.169]
ok: [172.31.6.71]

TASK [install-zip-unzip-wget : Install wget] ***********************************************************************************************************************************
ok: [172.31.6.71]
ok: [172.31.2.169]

PLAY RECAP *********************************************************************************************************************************************************************
172.31.2.169               : ok=4    changed=0    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
172.31.6.71                : ok=4    changed=0    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
```

2. Now to install tomcat

Like above we created a role named as install-tomcat

And inside install-tomcat/tasks we edit the main.yml as

```
[root@ip-172-31-11-58 ec2-user]# cat install-tomcat/tasks/main.yml
- name: Download Tomcat
  get_url:
    url: https://archive.apache.org/dist/tomcat/tomcat-9/v9.0.0.M21/bin/apache-tomcat-9.0.0.M21.tar.gz
    dest: /opt/
    mode: 0644

- name: Extract Tomcat
  unarchive:
    src: /opt/apache-tomcat-9.0.0.M21.tar.gz
    dest: /opt/
    remote_src: yes

- name: Create Tomcat Service
  copy:
    content: |
      [Unit]
      Description=Apache Tomcat Web Application Container
      After=syslog.target network.target

      [Service]
      Type=forking

      Environment=JAVA_HOME=/usr/lib/jvm/java-8-openjdk-amd64/jre
      Environment=CATALINA_PID=/opt/tomcat/temp/tomcat.pid
      Environment=CATALINA_HOME=/opt/apache-tomcat-9.0.0.M21
      Environment=CATALINA_BASE=/opt/tomcat
      Environment='CATALINA_OPTS=-Xms512M -Xmx1024M -server -XX:+UseParallelGC'
      Environment='JAVA_OPTS=-Djava.awt.headless=true -Djava.security.egd=file:/dev/./urandom'

      ExecStart=/opt/apache-tomcat-9.0.0.M21/bin/startup.sh
      ExecStop=/opt/apache-tomcat-9.0.0.M21/bin/shutdown.sh

      User=tomcat
      Group=tomcat
      UMask=0007
      RestartSec=10
      Restart=always

      [Install]
      WantedBy=multi-user.target
    dest: /etc/systemd/system/tomcat.service
```

And the playbook as

```
[root@ip-172-31-11-58 ec2-user]# cat playbook.yml
---
- name: Playbook Name
  hosts: web
  become: yes

  roles:
    - install-tomcat
```

3. Similarly for nginx file using role
We implemented it as

The main.yml

```
[root@ip-172-31-11-58 ec2-user]# cat install-nginx/tasks/main.yml
- name: Install Nginx
  yum:
    name: nginx
    state: present

- name: Create Nginx service
  copy:
    content: |
      [Unit]
      Description=The NGINX HTTP and reverse proxy server
      After=syslog.target network.target remote-fs.target nss-lookup.target

      [Service]
      Type=forking
      PIDFile=/run/nginx.pid
      ExecStartPre=/usr/sbin/nginx -t -q -g 'daemon on; master_process on;'
      ExecStart=/usr/sbin/nginx -g 'daemon on; master_process on;'
      ExecReload=/usr/sbin/nginx -g 'daemon on; master_process on;' -s reload
      ExecStop=/usr/sbin/nginx -g 'daemon on; master_process on;' -s stop
      PrivateTmp=true

      [Install]
      WantedBy=multi-user.target
    dest: /etc/systemd/system/nginx.service
```

And the playbook as

```
[root@ip-172-31-11-58 ec2-user]# cat playbook.yml
---
- name: Playbook Name
  hosts: web
  become: yes

  roles:
    - install-nginx
```

And what we got is OUTPUT

```
[root@ip-172-31-11-58 ec2-user]# ansible-playbook playbook.yml

PLAY [Playbook Name] ***********************************************************************************************************************
***********************************

TASK [Gathering Facts] *********************************************************************************************************************
***********************************
[WARNING]: Platform linux on host 172.31.2.169 is using the discovered Python interpreter at /usr/bin/python, but future installation o
f another Python interpreter could
change this. See https://docs.ansible.com/ansible/2.9/reference_appendices/interpreter_discovery.html for more information.
ok: [172.31.2.169]
[WARNING]: Platform linux on host 172.31.6.71 is using the discovered Python interpreter at /usr/bin/python, but future installation of
 another Python interpreter could
change this. See https://docs.ansible.com/ansible/2.9/reference_appendices/interpreter_discovery.html for more information.
ok: [172.31.6.71]

TASK [install-nginx : Install Nginx] *******************************************************************************************************
***********************************
ok: [172.31.2.169]
ok: [172.31.6.71]

TASK [install-nginx : Create Nginx service] ************************************************************************************************
***********************************
changed: [172.31.2.169]
changed: [172.31.6.71]

PLAY RECAP *********************************************************************************************************************************
***********************************
172.31.2.169               : ok=3    changed=1    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
172.31.6.71                : ok=3    changed=1    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
```